Oklahoma Water Resources Bulletin

& Summary of Current Conditions

September 1, 2004

Statewide Precipitation & General Summary

Moisture conditions throughout much of Oklahoma remain generally good although some areas are experiencing noticeable rainfall deficits over the past month. According to preliminary Mesonet weather station data provided by the Oklahoma Climatological Survey and National Weather Service (see below), the areas receiving the lowest percent of normal rainfall from March 1 through August 30 (the current growing season) are the Southeast and Southwest climate divisions (91 and 95 percent, respectively). The current state-averaged rainfall total is 22 inches, 103 percent of normal.

For the last 30 days, the state-averaged rainfall total is 2.76 inches, 103 percent of normal. However, East Central and Southeast Oklahoma are both considerably dry over the period (1.52 and 1.55 inches, 55 and 59 percent of normal precipitation, respectively).

Preliminary Statewide Precipitation By Climate Division

DIVISION (#)	Growing Season March 1—August 30, 2004			Last 30 Days August 1-30, 2004		
	Total Rainfall (inches)	Departure From Normal (inches)	Percent Of Normal	Total Rainfall (inches)	Departure From Normal (inches)	Percent Of Normal
Panhandle	15.96	+1.24	108	3.30	+0.87	136
North Central	21.08	+0.85	104	3.43	+0.48	116
Northeast	27.77	+3.76	116	2.18	-0.90	71
West Central	20.55	+2.03	111	4.65	+2.02	177
Central	22.01	-0.08	100	3.11	+0.56	122
East Central	26.05	+1.12	104	1.52	-1.25	55
Southwest	17.93	-0.92	95	2.79	+0.19	107
South Central	22.48	-0.07	100	2.38	-0.07	97
Southeast	23.76	-2.47	91	1.55	-1.07	59
Statewide	22.00	+0.64	103	2.76	+0.08	103

Information and data contained in this update of Oklahoma's water resource conditions are courtesy of the National Weather Service, Climate Prediction Center, Oklahoma Climatological Survey, State Department of Agriculture, Oklahoma Forestry Services, Agricultural Statistics Service, U.S. Army Corps of Engineers, U.S. Department of Agriculture/Forest Service, U.S. Geological Survey, Western Drought Coordination Council and National Drought Mitigation Center. This publication is issued weekly during times of specific concern regarding statewide or regional water situations and periodically—biweekly or monthly—the remainder of the year. **For more information, visit http://www.owrb.state.ok.us/features/drought.html and http://climate.ocs.ou.edu/drought/**.

Drought Indices

According to the latest Palmer Drought Severity Index (August 28, below), no regions in Oklahoma are currently experiencing drought conditions and only three of Oklahoma's nine climate divisions have undergone PDSI moisture decreases since July 31. The greatest decrease occurred in the East Central climate division.

The latest monthly Standardized Precipitation Index (through July, below) indicates only moderate long-term dryness in southeast Oklahoma. Among the *selected* time periods (3-, 6-, 9- and 12-month SPIs), no climate divisions indicate dry conditions. Considering longer periods (through six years), the Southeast climate division reports "moderately dry" conditions over the past 18 and 24 months. [SPI updates are available around the 10th of each month.]

The latest Keetch-Byram Drought Index (August 30, below), which measures the state of near-surface soil moisture (within the uppermost eight inches of soil) as well as the amount of fuel available for fires, indicates that drought-related fire conditions remain generally good throughout Oklahoma, although conditions continue to deteriorate somewhat in the southeast. Statewide, only one Mesonet station is currently at or above 600, generally indicative of more severe drought conditions (no stations had a reading above 600 on August 4). Idabel, in Southeast Oklahoma, retains the highest KBDI value (611). According to the Oklahoma Department of Agriculture, Food, and Forestry, Statewide Wildfire Preparedness is at Level 2 (moderate fire danger). No counties are currently in a Burn Ban or Red Flag Fire Alert, although the fire danger is increasing along the Oklahoma/Texas border.

Palmer Drought Severity Index

Standardized Precipitation Index
Through July 2004

Climate Division (#)	Current Status 8/28/2004	Value 8/28	Value 7/31	Change In Value	3-Month	6-Month	9-Month	12-Month
Northwest (1)	MOIST SPELL	1.96	1.59	**0.37**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	MODERATELY WET
North Central (2)	MOIST SPELL	1.50	0.80	**0.70**	NEAR NORMAL	MODERATELY WET	MODERATELY WET	MODERATELY WET
Northeast (3)	MOIST SPELL	1.99	2.35	**-0.36**	NEAR NORMAL	MODERATELY WET	MODERATELY WET	MODERATELY WET
West Central (4)	MOIST SPELL	1.39	-0.04	**1.43**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Central (5)	MOIST SPELL	1.17	0.30	**0.87**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
East Central (6)	INCIPIENT MOIST SPELL	0.57	1.05	**-0.48**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southwest (7)	INCIPIENT MOIST SPELL	0.84	-0.04	**0.88**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
South Central (8)	MOIST SPELL	1.44	1.19	**0.25**	MODERATELY WET	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast (9)	INCIPIENT MOIST SPELL	0.58	0.88	**-0.30**	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL

Keetch-Byram Drought Fire Index

Mesonet Station	County	Climate Division	Current Value 8/30/2004
Idabel	McCurtain	Southeast	611
Broken Bow	McCurtain	Southeast	529
Wister	Johnston	South Central	497

Total stations above 600 = 1

Anticipated Impact

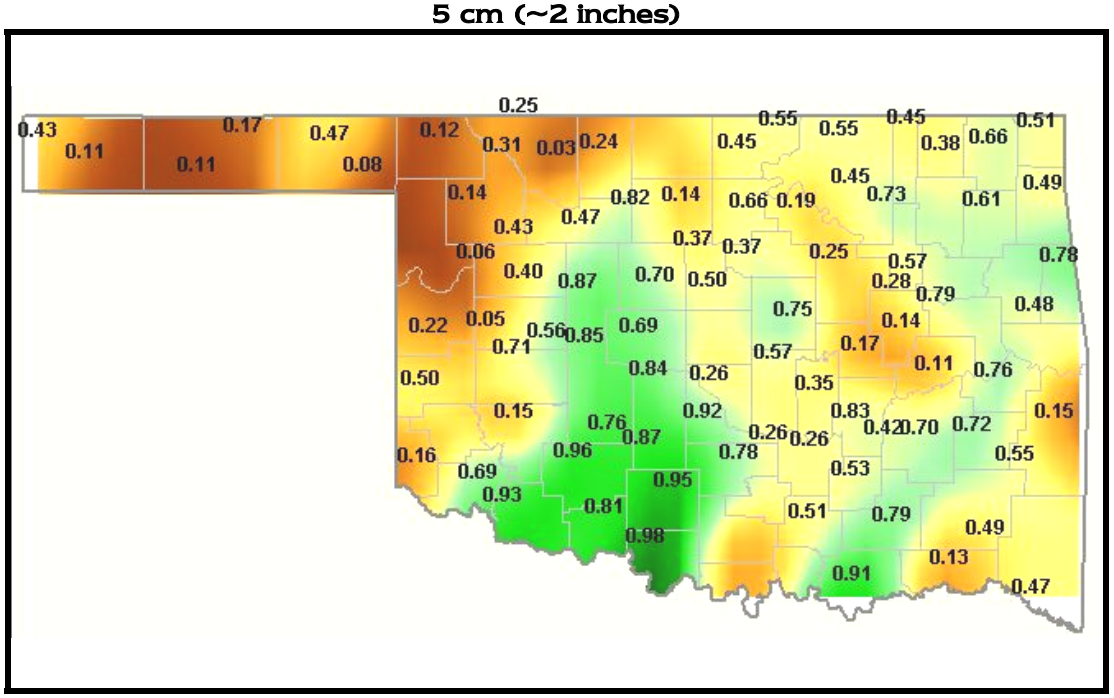
600-800: often associated with more severe drought; increased wildfire occurrence; intense deep burning fires with significant downwind spotting; live fuels also expected to burn actively.

400-600: lower litter and duff layers actively contribute to fire intensity and will burn actively; typical of late summer, early fall.

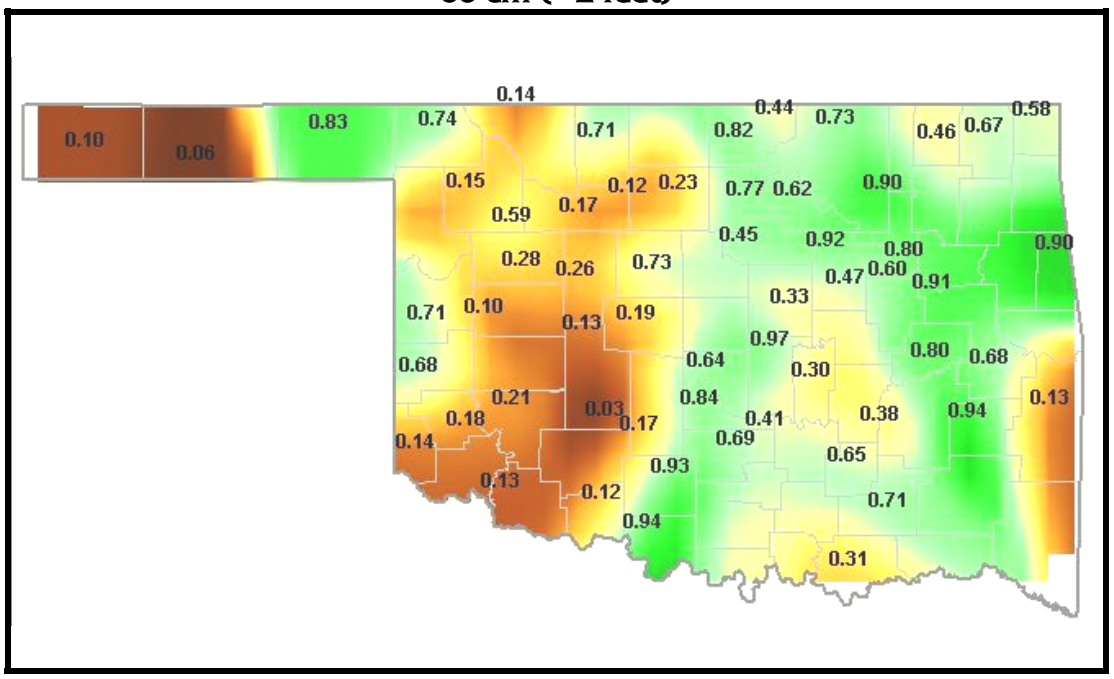
The PDSI may underestimate or overestimate the severity of ongoing dry periods. The SPI, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides a seasonal estimation of precipitation while the 6-month SPI can be very effective in showing precipitation over distinct seasons. The Keetch-Byram Drought Index provides a gauge of dead fuel currently available for potential fires.

Soil Moisture
Fractional Water Index
August 30, 2004
(Courtesy Oklahoma Climatological Survey)

5 cm (~2 inches)



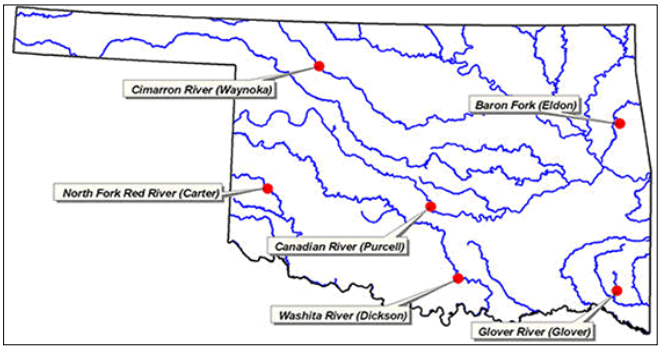
60 cm (~2 feet)



FWI Value	Soil Wetness Conditions
1.0 – 0.8	Enhanced Growth (~Field Capacity)
0.8 – 0.5	Limited Growth
0.5 – 0.3	Plants Dying
< 0.1	Barren Soil

Streamflow Conditions

Flows in rivers and streams in Oklahoma remain generally near average. Considering overall trends as well as current flows, the most recent data (August 17, attached) from the six U.S. Geological Survey/OWRB stream gage sites selected to monitor the general condition of Oklahoma streams (daily streamflow since October 1, 2002, compared to long-term, normal/median daily discharges) indicate **below average flow** in *southeast* (Glover River, McCurtain County) Oklahoma; **near average flow** in the *northwest* (Cimarron River, Woods County), *central* (Canadian River, McClain County), *south central* (Washita River, Carter County), and *northeast* (Baron Fork, Cherokee County) regions; and **above average flow** in the *southwest* (North Fork/Red River, Beckham County).



Weather Forecast

The National Weather Service 8- to 14-day outlook (September 7-13) calls for normal precipitation for all but far northeast Oklahoma, where above normal rainfall is anticipated. Normal temperatures should prevail for the entire state throughout the period.

Given recent trends and observed oceanic and atmospheric patterns, it is likely that near-neutral ENSO (El Niño/Southern Oscillation) conditions in the tropical Pacific will continue for at least the next 3 months. After that, however, considerable uncertainty exists. Some forecasts indicate that El Niño could develop within the next three to six months and intensify through the end of the year. El Niños, warm water patterns that increase the chances for generally cooler, wetter conditions in the southern U.S. (including Oklahoma), occur about every two to seven years.

Crop Report

August 29 - This past week typified August weather in Oklahoma: windy, dry and hot. Producers spent much of the week fertilizing and preparing to plant small grains. Wheat seeding got underway last week and was running just a little ahead of normal. Wheat and rye seedings were at 3 and 5 percent, respectively. The windy, hot weather did cause the topsoil moisture supplies to slip from last week but conditions were still much better than a year ago. Topsoil moisture was 2 percent surplus, 73 percent adequate, 21 percent short, and 4 percent very short. Subsoil moisture was 2 percent surplus, 73 percent adequate, 19 percent short, and 6 percent very short. There were 6.1 days suitable for field work during the week.

Wheat seedbed preparations jumped 22 points last week to 64 percent complete, compared to the five-year average of 55 percent and last year's average of 49 percent. Seedbed preparations for oats went up 9 points to 45 percent but this was still one point below the five-year average. Rye seedbed prepared was at 56 percent complete.

Conditions for summer crops were mostly good. Corn harvest activities have increased with reports of good yields. Corn in the dough stage increased 8 points to 98 percent and 45 percent of the corn had matured. Twenty-one percent of the corn was harvested, behind last year's average of 27 percent and the five-year average of 23 percent. Sorghum progress was also slightly behind average with 82 percent headed, 41 percent coloring, 19 percent mature, and 3 percent harvested. The five-year average for sorghum is 83 percent headed, 44 percent coloring, 20 percent mature, and 7 percent harvested. Soybean blooming increased seven points to 90 percent. Seventy-nine percent of soybeans were setting pods and 13 percent were mature. Soybean harvest began last week with 2 percent of the crop harvested. Most of the peanut crop had set pods and 32 percent were mature. Cotton made good progress with hot weather prompting the bolls to open on 21 percent of the crop, ahead of the five-year average of 15 percent.

The weather was also beneficial to hay producers as the fourth cutting of alfalfa jumped to 85 percent and the fifth cutting jumped to 23 percent. Both of these were considerably ahead of the five-year average. Three-fourths of the second cutting of other hay was complete. Watermelon harvest was 97 percent complete, with conditions mostly fair. Peaches and pecans were mostly in good condition. An average nut set was still expected, although there have been some insect and disease pressures.

Livestock conditions were good to excellent with very strong markets. Livestock insect activity was mostly moderate and death loss of cattle was light. The market was still strong for cattle. The hot, dry weather, especially around the Panhandle, was causing some strain on pastures. However, pasture conditions still remain very good with 80 percent in good to excellent condition.

Reservoir Storage

Lake storage in Oklahoma remains generally good, although lakes in the southwest continue to experience low levels. As of August 30, the combined normal conservation pools of 31 selected major federal reservoirs across Oklahoma (see below) are approximately 96.7 percent full, a 1.6 percent decrease from that recorded on August 3, according to information from the U.S. Army Corps of Engineers (Tulsa District). Twenty-seven reservoirs have experienced lake level decreases since that time. Nineteen reservoirs are currently operating at less than full capacity (compared to 10 last month). Two reservoirs—Lugert-Altus, only 19.1 percent full; and Tom Steed, 53.9 percent—remain below 80 percent capacity.

Storage in Selected Oklahoma Lakes & Reservoirs
08/30/2004

Climate Division Lake or Reservoir	*Conservation Storage* (acre-feet)	*Present Storage* (acre-feet)	*Percent of Conservation Storage*
North Central			
Fort Supply	13,900	12,621	90.8
Great Salt Plains	31,420	31,420	100.0
Kaw*	375,160	375,160	100.0
Regional Totals/Averages	**420,480**	**419,201**	**99.7**
Northeast			
Birch	19,225	18,789	97.7
Copan	43,400	43,400	100.0
Fort Gibson	365,200	365,200	100.0
Grand	1,672,000	1,553,280	92.9
Hudson	200,300	200,300	100.0
Hulah	25,100	25,100	100.0
Keystone	510,059	505,896	99.2
Oologah	552,210	546,773	99.0
Skiatook	322,700	322,700	100.0
Regional Totals/Averages	**3,710,194**	**3,581,438**	**96.5**
West Central			
Canton	111,310	92,780	83.4
Foss	165,480	154,135	93.1
Regional Totals/Averages	**276,790**	**246,915**	**89.2**
Central			
Arcadia	27,520	27,360	99.4
Heyburn	7,105	7,017	98.8
Thunderbird	119,600	119,600	100.0
Regional Totals/Averages	**154,225**	**153,977**	**99.8**
East Central			
Eufaula*	2,260,943	2,260,943	100.0
Tenkiller	654,100	654,100	100.0
Regional Totals/Averages	**2,915,043**	**2,915,043**	**100.0**
Southwest			
Fort Cobb	80,010	76,625	95.8
Lugert-Altus	132,830	25,379	19.1
Tom Steed	88,970	47,975	53.9
Regional Totals/Averages	**301,810**	**149,979**	**49.7**
South Central			
Arbuckle	72,400	72,400	100.0
McGee Creek	113,930	109,808	96.4
Texoma*	2,564,210	2,564,210	100.0
Waurika*	190,200	153,303	80.6
Regional Totals/Averages	**2,940,740**	**2,899,721**	**98.6**
Southeast			
Broken Bow*	958,180	919,234	95.9
Hugo*	158,617	152,439	96.1
Pine Creek*	61,570	60,186	97.8
Sardis	274,330	273,527	99.7
Wister	60,162	56,800	94.4
Regional Totals/Averages	**1,512,859**	**1,462,186**	**96.7**
State Totals	**12,232,141**	**11,828,460**	**96.7**

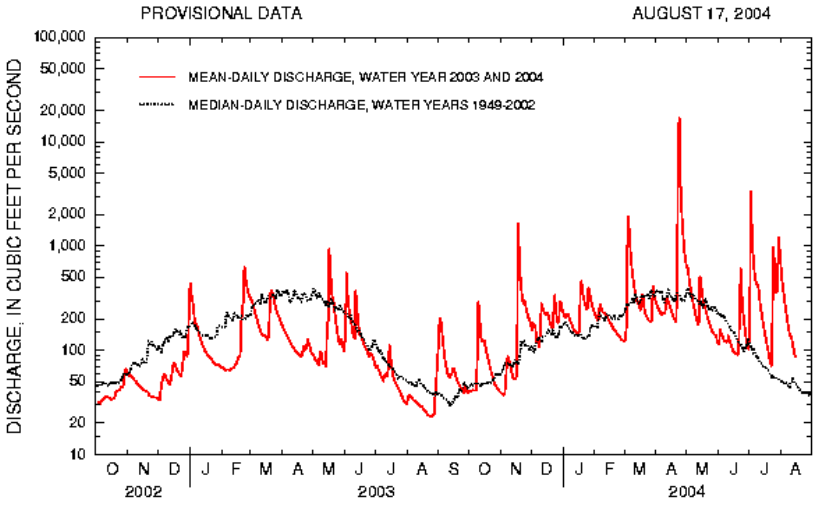
* indicates seasonal pool operation; actual storage figures/percentages may v ary.

Baron Fork at Eldon

Baron Fork at Eldon, Oklahoma

Station No. 07197000
Northeast Oklahoma

Drainage Area 307 square miles



Comparison of daily discharges for water year 2003 and 2004 and period of record for Baron Fork at Eldon, Oklahoma.

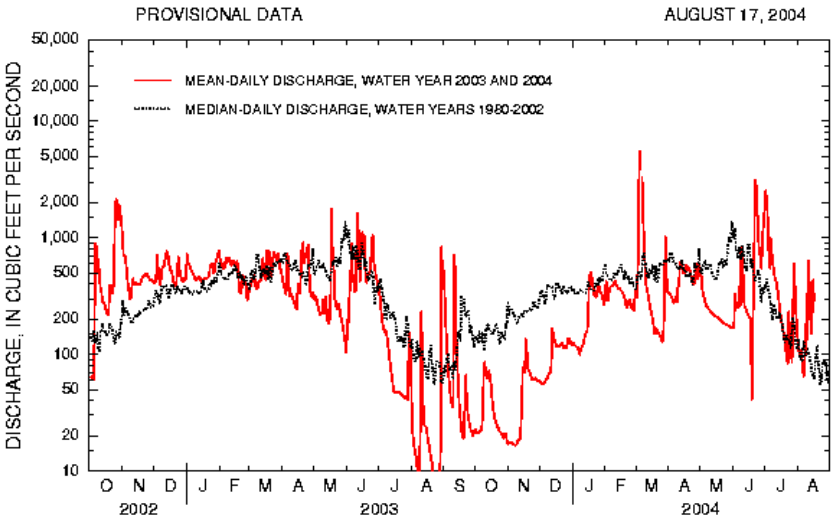
Data from U.S. Geological Survey

Canadian River at Purcell

Canadian River at Purcell, Oklahoma

Station No. 07229200
Central Oklahoma

Drainage Area 25,939 square miles



Comparison of daily discharges for water year 2003 and 2004 and period of record for Canadian River at Purcell, Oklahoma.

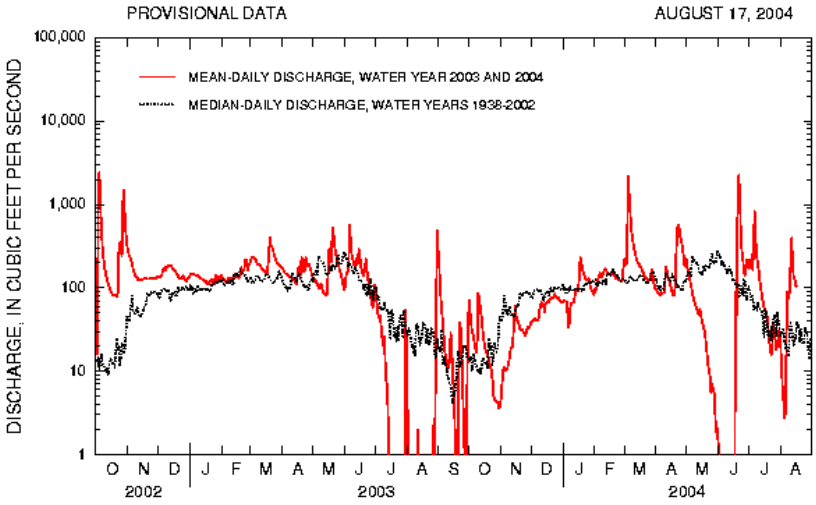
Data from U.S. Geological Survey

Cimarron River near Waynoka

Cimarron River near Waynoka, Oklahoma

Station No. 07158000
Northwest Oklahoma

Drainage Area 13,334 square miles



Comparison of daily discharges for water year 2003 and 2004
and period of record for Cimarron River near Waynoka, Oklahoma.

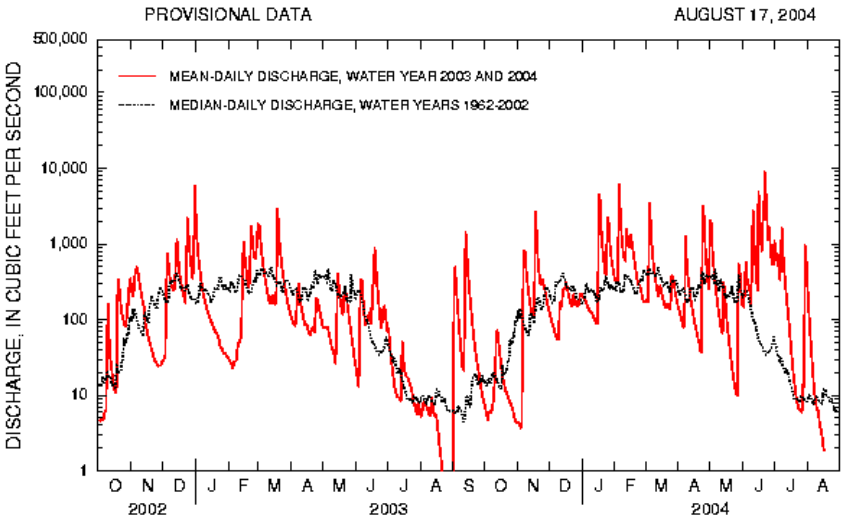
Data from U.S. Geological Survey

Glover River near Glover

Glover River near Glover, Oklahoma

Station No. 07337900
Southeast Oklahoma

Drainage Area 315 square miles



Comparison of daily discharges for water year 2003 and 2004
and period of record for Glover River near Glover, Oklahoma.

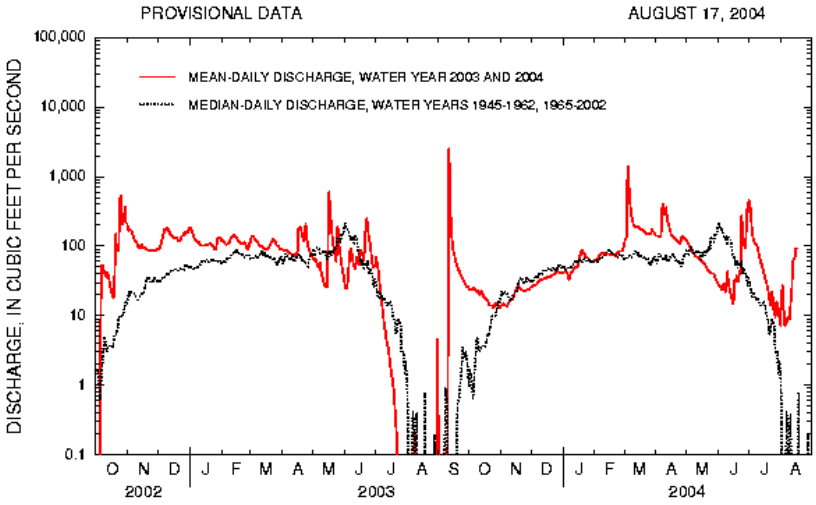
Data from U.S. Geological Survey

North Fork of the Red River near Carter

North Fork Red River near Carter, Oklahoma

Station No. 07301500
Southwest Oklahoma

Drainage Area 2,337 square miles



Comparison of daily discharges for water year 2003 and 2004 and period of record for North Fork Red River near Carter, Oklahoma.

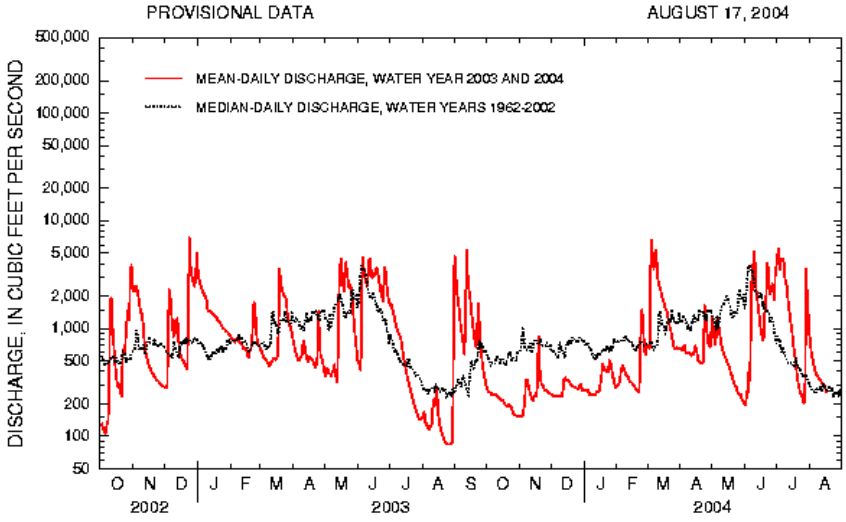
Data from U.S. Geological Survey

Washita River near Dickson

Washita River near Dickson, Oklahoma

Station No. 07331000
South-Central Oklahoma

Drainage Area 7,202 square miles



Comparison of daily discharges for water year 2003 and 2004 and period of record for Washita River near Dickson, Oklahoma.

Data from U.S. Geological Survey